CLAIMS

What is claimed is:

1. An optical routing system for routing optical signals between nodes, said system comprising:

a substrate; and

at least one optical element embedded within said substrate, said optical element configured to route said optical signals,

wherein said optical element is configurable in any one of six orthogonal directions.

2. The optical routing system of claim 1 wherein said substrate is transparent.

3. The optical routing system of claim 1 wherein said at least one optical element is configured as a node.

4. The optical routing system of claim 1 wherein said at least one element is arranged in an array.

5. The optical routing system of claim 4 wherein said array is two-dimensional.

6. The optical routing system of claim 4 wherein said array is three-dimensional.

7. The optical routing system of claim 1 wherein said at least one optical element is a microsphere.

8. The optical routing system of claim 1 wherein said substrate is multilayered.

9. The optical routing system of claim 1 wherein said optical signals are routed in a prespecified configuration.

10. The optical routing system of claim 2 wherein said transparent substrate is transparent to the wavelength of said optical signals.

11. The optical routing system of claim 1 wherein said at least one optical element is spherical.

12. The optical routing system of claim 11 wherein said at least one optical element includes a surface reflecting means.

13. An optical routing system comprising:

a substrate having an optical path interconnecting at least one input with at least one optical device via a configurable optical router; and

at least a portion of the optical device and the configurable optical router within a substrate.

14. An optical backplane comprising a substrate having an optical path interconnecting at least one input with at least one optical device via a configurable sphere, at least the optical device and the configurable sphere within a substrate

15. The optical backplane of claim 14 wherein said spheres are positioned in optical alignment between optical backplanes for optical interconnection therebetween.

16. The optical backplane of claim 14 wherein said spheres are positioned within cavities in the substrate.

17. The optical backplane of claim 14, wherein said spheres are configurable with a selectively curable adhesive.